Arctic Challenge for Sustainability II: Japan's New Arctic Flagship Project

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Japan's involvement in the Arctic scientific cooperation

The origins of Japan's involvement in Arctic research date back to the 1950s and to the establishment of the National Institute of Polar Research (NIPR) in 1973. These early steps were succeeded by the diversification of activities and increased international cooperation in the 1990s. A new phase of Japan's Arctic engagement emerged in the form of the establishment of the Ny-Ålesund research station on Svalbard in 1991 and Japan's membership in the International Arctic Science Committee (IASC). This was soon followed by the introduction of the International Northern Sea Route Programme (INSROP, initiated by Norway, Japan and Russia); this was succeeded by the Japan Northern Sea Route Programme (JANSROP), which continued until 2005.1 The most recent phase, during which Japan has applied for and been awarded with an observer status in the Arctic Council, has been characterised by nationwide multidisciplinary research projects and platforms. The Japan Consortium for Arctic Environmental Research (JCAR) was established in 2011 as a nationwide network-based organisation. The GRENE Arctic Climate Change Research Project was conducted between 2011 and 2016 under the leadership of NIPR as a core institute and the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) as an associated institute. The Arctic Challenge for Sustainability (ArCS) succeeded GRENE and lasted until 2020.

The ArCS project incorporated social sciences and humanities as a new element and was administered by NIPR, JAMSTEC and Hokkaido University, which established its Arctic Research Center in 2015. The same organisations have directed the Japan Arctic Research Network Center (J-ARC Net), which was established in 2016. Hokkaido University has also participated actively in UArctic activities. The 'Arctic Challenge for Sustainability II (ArCS II, June 2020 - March 2025)' project is funded by the Ministry of Education, Culture, Sports, Science and Technology-Japan and is jointly

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[1] More about Japan's past involvement in Arctic research, see: Tonami, A., & S. Watters (2012). Japan's Arctic policy: The sum of many parts. In L. Heininen, H. Exner-Pirot & J. Plouffe (Eds.) Arctic Yearbook 2012 (pp. 93-103). Akureyri, Iceland: Northern Research Forum; Ohnishi, F. (2016). Japan's Arctic policy development: From engagement to a strategy. In L. Lunde, J. Yang & I. Stensdal (Eds.). Asian countries and the Arctic future (pp. 171-182). Singapore: World Scientific Publishing.

managed by NIPR, JAMSTEC and Hokkaido University. Aside from continuing research and educational activities executed during the preceding projects, ArCS II adds new layers to Japan's Arctic research, for example, by strengthening the role of engineering sciences.

ArCS II objectives and structure

ArCS II consists of four strategic goals and 11 research programs. Therefore, it differs from ArCS, wherein the international collaborative research was carried out under the umbrella of eight study themes, one of which was the Arctic Data Archive System (ADS). The strategic goals of the new project, which were identified as the key parameters contributing to understanding the Arctic's changes and its development toward the sustainable future, are as follows: 1) Advanced Observation of Arctic Environmental Change, 2) Improvement of Weather and Climate

Table 1: ArCS II Research Programs

Field and Principal Investigator	Title of the Program
Atmosphere PI: Makoto Koike (The University of Tokyo)	Atmospheric Environment and Climate Forcings in the Arctic
Ocean PI: Eiji Watanabe (JAMSTEC)	Research and Public Dataset Production on the Arctic Marine Environment
Cryosphere PI: Teruo Aoki (NIPR)	A Changing Cryosphere in a Rapidly Warming Arctic: Properties and Processes
Land PI: Hideki Kobayashi (JAMSTEC)	Biogeochemical Cycling in the Arctic Terrestrial Ecosystem, Permafrost and Periglacial Regions
Teleconnection PI: Meiji Honda (Niigata University)	Teleconnections and the Predictability of Weather and Climate
Climate Prediction PI: Hiroyasu Hasumi (The University of Tokyo)	Weather and Climate Prediction and Its Technological Improvement
Human Society PI: Hiroki Takakura (Tohoku University)	Human Security, Energy and Food in the Arctic under Climate Change
Arctic Sea Routes PI: Akihisa Konno (Kogakuin University)	Sustainable Arctic Sea Routes in a Rapidly Changing Environment
Coastal Environments PI: Shin Sugiyama (Hokkaido University)	Arctic Coastal Change and Its Impact on Society
International Law PI: Akiho Shibata (Kobe University)	Designing Resilient International Legal Regimes for a Sustainable Arctic and the Contribution of Japan
International Relations PI: Fujio Ohnishi (Hokkaido University)	Elucidating the Complex Dynamics of Arctic Politics and Its Contribution to Japan's Arctic Policy

Prediction, 3) Impact of Arctic Environmental Change on Society and 4) Legal/Policy Response and Research Implementation for a Sustainable Arctic. The achievement of these goals is expected to lead to a situation where existing environmental conditions are understood accurately, uncertainties can be reduced, the challenges different Arctic communities are facing can be identified, and the international framework for the implementation of actions paving the way for the sustainable development can be understood and effectively utilized.

While the individual research programs introduced in Table 1 form the administrative structure of the project and guide the concrete research activities, they are neither silos nor entities entirely separate from each other. By contrast, interdisciplinarity and cooperation between different programs are both encouraged and expected.

In addition to research-related activities, ArCS II pays special attention to the development of human resources and the dissemination of knowledge and information acquired through the project. The practical implementation of the so-called priority subjects occurs through the International Research Exchange Program, the Overseas Fellowship Program and the Call for Complementary Research Projects. Furthermore, the strategic dissemination of Arctic information is to be performed through the establishment of the Arctic Environmental Information website and the Arctic Sea Ice Information Center. In addition to the domestic education and outreach activities, ArCS II supports Japanese experts' participation in international forums and information sharing between academics and policymakers.

International relations and law as a part of the ArCS II project

Those familiar with the ArCS project may remember that all research related to social sciences and humanities used to be gathered based on one theme, entitled 'People and Community'. Under the new project structure, which reflects the strategic goals, social scientists and scholars representing humanities have affiliated themselves with various research programs, often also including natural scientists and researchers with a background in engineering. While many cultural anthropologists and economists, for example, are contributing to the programs focusing on environmental change and society, there are two research programs with a clear emphasis on international relations and international law.

The research program 'Elucidating the Complex Dynamics of Arctic Politics and Its Contribution to Japan's Arctic Policy' approached Arctic multilevel

governance through the lens of state-level cooperation and conflict, the role of corporate actors in Arctic governance, the political dynamics between the state and indigenous people, the role of non-state actors and paradiplomacy, the formation and transformation of Japan's national awareness of the Arctic, and an economic analysis of Arctic policy issues. This research program consists of six closely cooperating subgroups, each of which have overseas partners contributing to their activities. The Rule of Law has for years been one of the basic principles and objectives of Japan's Arctic policy. The 'Designing Resilient International Legal Regimes for a Sustainable Arctic and the Contribution of Japan' research program brings continuity to the previous activities by approaching the rapidly changing Arctic from the perspective of international law. The concrete issues to be studied from the perspective of the international legal framework include, for example, international scientific cooperation, the sustainable use of the Arctic Ocean (e.g., issues concerning the Northern Sea Route and the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean), the rights of indigenous peoples and the sustainable development of the Arctic. Although the COVID-19 pandemic has exerted a major impact on the activities performed during the first year of ArCS II, the activities of both the IR and international law research programs – which encompass seminars, publications, policy recommendations and dialogue with various stakeholders – are based on international cooperation.